AMENDMENTS TO THE DRAWINGS

Replacement formal drawings of Figures 1-30 are submitted concurrently herewith under a separate cover letter.

REMARKS

By this Amendment, claims 1, 3-41, 43-56, 58-60 are amended. Claims 2, 42, 57 and 61 remain in the application. Thus, claims 1-61 are active in the application. Reexamination and reconsideration of the application are respectfully requested.

The specification and abstract have been carefully reviewed and revised in order to correct grammatical and idiomatic errors in order to aid the Examiner in further consideration of the application. No new matter has been added.

Replacement formal drawings of Figures 1-30 are submitted concurrently herewith under a separate cover letter in order to make editorial revisions to the drawings. As described beginning at line 10 on page 95 of the specification, Figure 23 illustrates a WDM gain adjuster 300a which includes a demultiplexing section 301a and a multiplexing section 302a. However, the demultiplexing section 301a was incorrectly labeled as the "multiplexing section 301a" in Figure 23. Accordingly, Figure 23 has been revised to properly identify the "demultiplexing section" as corresponding to reference numeral 301a in the left portion of the WDM gain adjuster 300a.

The Applicant notes that the wavelengths of 1.30 μm and 1.55 μm are used throughout the specification as examples of wavelengths which are used in the optical demultiplexer, optical multi-demultiplexer and optical device of the present invention. Accordingly, the units of the wavelengths used in the specification are micrometers (μm). However, numerous labels in the drawings were presented with units of millimeters (mm) instead of micrometers. Therefore, each instance of units of millimeters has been replaced with units of micrometers in the drawings.

The Applicant submits that no new matter has been added via the revisions to the drawings. Approval of the replacement formal drawings is respectfully requested.

The Applicant thanks the Examiner for kindly indicating that claims 45-61 are allowed on page 4 of the Office Action. Minor editorial revisions have been made to claims 45-56 and 58-60 in order to improve their U.S. form and to provide proper antecedent basis for all of the limitations recited therein. The Applicant submits that the revisions to claims 45-56 and 58-60 do not broaden or narrow their scope of protection for the present invention. Accordingly, the Applicant submits that claims 45-61 are still clearly in condition for allowance.

On page 2 of the Office Action, claims 1, 5, 34-37 and 43-44 were rejected under 35 U.S.C. § 102(e) as being anticipated by Leuthold (U.S. 6,580,844). This rejection is respectfully traversed for the following reasons.

Claim 1 recites an optical demultiplexer for separating input wavelength-multiplexed light of first and second wavelengths. The optical demultiplexer of claim 1 is recited as comprising, in part, first and second output portions for outputting the light of first and second wavelengths from the multi-mode propagation portion via such positions on an output end face as to cause separation of the powers of the light of first and second wavelengths and to maximize an extinction ratio indicating the size of the power of light of a desired wavelength with respect to the power of light of a wavelength to be cut off.

Claim 35 recites an optical device for transmitting/receiving light of first and second wavelengths. The optical device of claim 35 is recited as comprising, in part, first and second output portions for outputting the light of first and second wavelengths from the multi-mode propagation portion via such positions on an output end face as to cause separation of the powers of the light of first and second wavelengths and to maximize an extinction ratio indicating the size of the power of light of a desired wavelength with respect to the power of light of a wavelength to be cut off.

Claim 37 recites an optical demultiplexer for separating input wavelength-multiplexed light of n types of different wavelengths, where n is a natural integer. The optical demultiplexer of claim 37 is recited as comprising, in part, n output portions for outputting the light of n types of different wavelengths from the multi-mode propagation portion via such positions on an output end face as to cause separation of the powers of the light of n types of different wavelengths and to maximize an extinction ratio indicating the size of the power of light of a desired wavelength with respect to the power of light of a wavelength to be cut off.

Claim 43 recites an optical multi-/demultiplexer for combining/separating light of first and second wavelengths. The optical multi-/demultiplexer of claim 43 is recited as comprising, in part, first and second output portions for outputting the light of first and second wavelengths from the multi-mode propagation portion via such positions on an output end face as to cause separation of the powers of the light of first and second wavelengths and to maximize an extinction ratio indicating the size of the power of light of a desired wavelength with respect to the power of light of a wavelength to be cut off.

Claim 44 recites an optical multi-/demultiplexer for combining/separating light of n types of different wavelengths, where n is a natural integer. The optical multi-/demultiplexer of claim 44 is recited as comprising, in part, n output portions for outputting the light of n types of different wavelengths from the multi-mode propagation portion via such positions on an output end face as to cause separation of the powers of the light of n types of different wavelengths and to maximize an extinction ratio indicating the size of the power of light of a desired wavelength with respect to the power of light of a wavelength to be cut off.

Accordingly, claims 1, 35, 37 and 43-44 each recite first and second output portions (or n output portions) which are provided in such positions as to maximize an extinction ratio indicating the size of the power of light with a desired wavelength with respect to the power of a light with a wavelength to be cut off.

Despite the Examiner's assertion to the contrary, Leuthold does not disclose or suggest this feature of claims 1, 35, 37 and 43-44.

Leuthold discloses a broadband wavelength-division multiplexer 100 having a multi-mode interference (MMI) waveguide 104 which produces an output wavelength-division multiplexed (WDM) signal from a first input signal (1.3 μm) and a second input signal (1.55 μm). Leuthold also discloses that the wavelength-division multiplexer 100 has a WDM output waveguide 105 for coupling out all or some of the power of the WDM signal outputted from the MMI waveguide 104 by trapping all or some of the power one of the input signals used to output the WDM signal. Leuthold also discloses that the wavelength-division multiplexer 100 can be used as a wavelength-division demultiplexer which demultiplexes an input WDM signal and produces two output signals where the MMI waveguide 104 couples partial power from one of the two inputted signals and substantially no power from the other input signal to produce one of the two output signals at one of the corresponding wavelength band of the one inputted signal (see Column 2, lines 7-27).

With reference to the demultiplexer 500 shown in Figure 5(a), Leuthold discloses that the output signal produced at the output waveguide 505 has "y% of the power from wavelength λ_2 in the input WDM signal and now power from wavelength λ_1 in the input WDM signal." The output signal produced at the output waveguide 506 has "x% of power from wavelength λ1 in the input WDM signal and (100-y)% of power from wavelength λ2 in the input WDM signal." (See Column 5, line 65 to Column 6, line 3).

Accordingly, Leuthold does not disclose or suggest that both the output waveguides 505 and 506 are provided in such positions as to maximize the extinction ratio. However, as described above, claims 1, 35, 37 and 43-44 each recite first and second output portions (or n output portions) which are provided in such positions as to maximize an extinction ratio indicating the size of the power of light with a desired wavelength with respect to the power of a light with a wavelength to be cut off.

The Examiner asserted that "Figure 4 teaches the amount of power by wavelength which can either be maximized or cut-off" and alleged the feature of the present invention of providing first and second output portions (or n output portions) in such positions as to maximize the extinction ratio can be derived from Leuthold.

However, the Applicant respectfully submits that Leuthold cannot be interpreted to derive the feature of the present invention of providing first and second output portions (or n output portions) in such positions as to maximize the extinction ratio.

In particular, the Applicant respectfully submits that Figure 4 of Leuthold does not disclose what the Examiner alleges it to disclose. In Figure 4 of Leuthold, the horizontal axis represents a wavelength. This is completely different from Figure 5 of the present application, in which the horizontal axis represents an output position of a multi-mode waveguide. Furthermore, despite the Examiner's assertion to the contrary, Figure 4 of Leuthold and its accompanying description in Column 5, lines 45-51 does not even contemplate "the amount of power by wavelength which can either be maximized or cut-off."

Accordingly, Leuthold clearly does not disclose or suggest first and second output portions (or n output portions) which are provided in such positions as to maximize an extinction ratio indicating the size of the power of light with a desired wavelength with respect to the power of a light with a wavelength to be cut off, as recited in claims 1, 35, 37 and 43-44.

Therefore, claims 1, 35, 37 and 43-44 are clearly not anticipated by Leuthold since Leuthold fails to disclose the output portions recited in claims 1, 35, 37 and 43-44.

Furthermore, because of the clear distinctions discussed above, the Applicant respectfully submits that it would not have been obvious to modify Leuthold in such as manner as to result in, or otherwise render obvious, the inventions of claims 1, 35, 37 and 43-44 since Leuthold does not even contemplate providing first and second output portions (or n output portions) in such positions as to maximize the extinction ratio.

Therefore, it is submitted that the claims 1, 35, 37 and 43-44, as well as claims 2-34, 36 and 38-42 which depend therefrom, are clearly allowable over the prior art as applied by the Examiner.

In view of the foregoing amendments and remarks, it is respectfully submitted that the present application is clearly in condition for allowance. An early notice thereof is respectfully solicited.

If, after reviewing this Amendment, the Examiner feels there are any issues remaining which must be resolved before the application can be passed to issue, the Examiner is respectfully requested to contact the undersigned by telephone in order to resolve such issues.

Respectfully submitted,

Hidenobu HAMADA

By: _____
Jonathan R. Bowser
Registration No. 54,574
Attorney for Applicant

JRB/nrj
Washington, D.C. 20006-1021
Telephone (202) 721-8200
Facsimile (202) 721-8250
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